

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-48. (Canceled)

49. (Currently Amended) A method for producing a silicon single crystal, wherein a silicon single crystal is grown by using the apparatus for producing a silicon single crystal according to Claim 47, crystal according to Czochralski method, the method comprising: melting a raw material in a crucible; contacting a seed crystal on a melt surface; and growing a silicon single crystal by using an apparatus, wherein Cu concentration in a component made of quartz to be used in a part in which a temperature in a furnace for single crystal growth is 1000 °C or more is 1 ppb or less, and Cu concentration in a component made of quartz to be used in a part in which a temperature in the furnace for single crystal growth is less than 1000 °C is 10 ppb or less.

50. (Currently Amended) A method for producing a silicon single crystal, crystal according to Claim 49, wherein a silicon single crystal is grown by using the apparatus for producing a silicon single crystal according to Claim 48, wherein devices and components of the apparatus being exposed in the furnace for single crystal growth do not contain Cu as a raw material.

51. (Currently Amended) The method for producing a silicon single crystal according to Claim 49, wherein when the silicon single crystal is grown, the silicon single crystal is grown so that a defect region therein at least contains Nv region outside an OSF ring over the entire region in the direction of the crystal growth axis.

52. (Currently Amended) The method for producing a silicon single crystal according to Claim 50, wherein when the silicon single crystal is grown, the silicon single

crystal is grown so that a defect region therein at least contains Nv region outside an OSF ring over the entire region in the direction of the crystal growth axis.

53-54. (Canceled)

55. (Currently Amended) The method for producing a silicon single crystal according to Claim 49, ~~wherein when in furnace components in the furnace for single crystal growth are cleaned, the cleaning is performed in a room environment in which cleanliness is class 1000 or more, wherein the method further comprises cleaning in-furnace components in the furnace by:~~

taking out the in-furnace components of the furnace,

transferring the in-furnace components to another room in which cleanliness in the room environment is class 1000 or more, and

cleaning the in-furnace components in the another room while maintaining the cleanliness in the room environment of the another room to be class 1000 or more.

56. (Currently Amended) The method for producing a silicon single crystal according to Claim 50, ~~wherein when in furnace components in the furnace for single crystal growth are cleaned, the cleaning is performed in a room environment in which cleanliness is class 1000 or more, wherein the method further comprises cleaning in-furnace components in the furnace by:~~

taking out the in-furnace components of the furnace,

transferring the in-furnace components to another room in which cleanliness in the room environment is class 1000 or more, and

cleaning the in-furnace components in the another room while maintaining the cleanliness in the room environment of the another room to be class 1000 or more.

57. (Currently Amended) The method for producing a silicon single crystal according to Claim 49, wherein after the silicon single crystal is grown, ~~in furnace~~

~~components in the furnace for single crystal growth are cleaned in a room environment in which cleanliness is class 1000 or more; the method further comprises cleaning in-furnace components in the furnace by:~~

taking out the in-furnace components of the furnace,

transferring the in-furnace components to another room in which cleanliness in the room environment is class 1000 or more, and

cleaning the in-furnace components in the another room while maintaining the cleanliness in the room environment of the another room to be class 1000 or more; and then, a next silicon single crystal is grown by using the cleaned in-furnace components.

growing another silicon single crystal by using the cleaned in-furnace components.

58. (Currently Amended) The method for producing a silicon single crystal according to Claim 50, wherein after the silicon single crystal is grown, ~~in-furnace components in the furnace for single crystal growth are cleaned in a room environment in which cleanliness is class 1000 or more; the method further comprises cleaning in-furnace components in the furnace by:~~

taking out the in-furnace components of the furnace,

transferring the in-furnace components to another room in which cleanliness in the room environment is class 1000 or more, and

cleaning the in-furnace components in the another room while maintaining the cleanliness in the room environment of the another room to be class 1000 or more; and then, a next silicon single crystal is grown by using the cleaned in-furnace components.

growing another silicon single crystal by using the cleaned in-furnace components.

59. (Previously Presented) The method for producing a silicon single crystal according to Claim 55, wherein when the in-furnace components are cleaned, cleaning tools and jigs which do not contain Cu as a raw material are used.

60. (Previously Presented) The method for producing a silicon single crystal according to Claim 56, wherein when the in-furnace components are cleaned, cleaning tools and jigs which do not contain Cu as a raw material are used.

61. (Previously Presented) The method for producing a silicon single crystal according to Claim 57, wherein when the in-furnace components are cleaned, cleaning tools and jigs which do not contain Cu as a raw material are used.

62. (Previously Presented) The method for producing a silicon single crystal according to Claim 58, wherein when the in-furnace components are cleaned, cleaning tools and jigs which do not contain Cu as a raw material are used.

63. (Previously Presented) The method for producing a silicon single crystal according to Claim 49, wherein the furnace for single crystal growth is provided in a room environment in which cleanliness is class 1000 or more.

64. (Previously Presented) The method for producing a silicon single crystal according to Claim 50, wherein the furnace for single crystal growth is provided in a room environment in which cleanliness is class 1000 or more.

65. (Previously Presented) The method for producing a silicon single crystal according to Claim 55, wherein after melting of a silicon raw material is finished, it is left for 3 hours or more on a condition that a heating heater is heated with an electric power of 80 % or more of the power in the raw material melting and flow amount of an inert gas introduced in the furnace for single crystal growth is flow amount in the single crystal growth or more.

66. (Previously Presented) The method for producing a silicon single crystal according to Claim 56, wherein after melting of a silicon raw material is finished, it is left for 3 hours or more on a condition that a heating heater is heated with an electric power of 80 % or more of the power in the raw material melting and flow amount of an inert gas introduced in the furnace for single crystal growth is flow amount in the single crystal growth or more.

67. (Previously Presented) The method for producing a silicon single crystal according to Claim 59, wherein after melting of a silicon raw material is finished, it is left for 3 hours or more on a condition that a heating heater is heated with an electric power of 80 % or more of the power in the raw material melting and flow amount of an inert gas introduced in the furnace for single crystal growth is flow amount in the single crystal growth or more.

68. (Previously Presented) The method for producing a silicon single crystal according to Claim 60, wherein after melting of a silicon raw material is finished, it is left for 3 hours or more on a condition that a heating heater is heated with an electric power of 80 % or more of the power in the raw material melting and flow amount of an inert gas introduced in the furnace for single crystal growth is flow amount in the single crystal growth or more.

69. (Previously Presented) The method for producing a silicon single crystal according to Claim 61, wherein after melting of a silicon raw material is finished, it is left for 3 hours or more on a condition that a heating heater is heated with an electric power of 80 % or more of the power in the raw material melting and flow amount of an inert gas introduced in the furnace for single crystal growth is flow amount in the single crystal growth or more.

70. (Previously Presented) The method for producing a silicon single crystal according to Claim 62, wherein after melting of a silicon raw material is finished, it is left for 3 hours or more on a condition that a heating heater is heated with an electric power of 80 % or more of the power in the raw material melting and flow amount of an inert gas introduced in the furnace for single crystal growth is flow amount in the single crystal growth or more.

71. (Previously Presented) The method for producing a silicon single crystal according to Claim 63, wherein after melting of a silicon raw material is finished, it is left for 3 hours or more on a condition that a heating heater is heated with an electric power of 80 % or more of the power in the raw material melting and flow amount of an inert gas introduced in the furnace for single crystal growth is flow amount in the single crystal growth or more.

72. (Previously Presented) The method for producing a silicon single crystal according to Claim 64, wherein after melting of a silicon raw material is finished, it is left for 3 hours or more on a condition that a heating heater is heated with an electric power of 80 % or more of the power in the raw material melting and flow amount of an inert gas introduced in the furnace for single crystal growth is flow amount in the single crystal growth or more.

73. (Currently Amended) A method for producing a silicon single crystal by Czochralski method, the method comprising:

melting a raw material in a crucible;
contacting a seed crystal on a melt surface; and
growing a silicon single crystal, wherein after melting of a silicon ~~the~~ raw material is finished, it is left for 3 hours or more on a condition that a heating heater is heated with an electric power of 80 % or more of the power in the raw material melting and flow amount of an inert gas introduced in ~~the~~ a furnace for single crystal growth is flow amount in the single crystal growth or more, and then, ~~a~~ the silicon single crystal is grown.

74. (Currently Amended) A method for producing a silicon single crystal by Czochralski method, ~~wherein when in furnace components in the furnace for single crystal growth are cleaned, the cleaning is performed in a room environment in which cleanliness is class 1000 or more, and~~ crystal according to Czochralski method, the method comprising:

cleaning in-furnace components in the furnace by
taking out the in-furnace components of the furnace,
transferring the in-furnace components to another room in which cleanliness in
the room environment is class 1000 or more, and
cleaning the in-furnace components in the another room while maintaining the
cleanliness in the room environment of the another room to be class 1000 or more;

melting a raw material in a crucible;

contacting a seed crystal on a melt surface; and
growing a silicon single crystal ~~a silicon single crystal is grown by using the in-~~
furnace cleaned components.

75-76. (Canceled)

77. (Currently Amended) A method for producing a silicon single crystal by using
~~a combined apparatus of at least two or more of~~

an apparatus for producing a silicon single crystal according to Czochralski method,
wherein Cu concentration in a component made of quartz to be used in a part in which a
temperature in a furnace for single crystal growth is 1000 °C or more is 1 ppb or less, and Cu
concentration in a component made of quartz to be used in a part in which a temperature in a
the furnace for single crystal growth is less than 1000 °C is 10 ppb or less;

an apparatus for producing a silicon single crystal according to Czochralski method,
wherein devices and components being exposed in the furnace for single crystal growth do
not contain Cu as a raw material; and

an apparatus for producing a silicon single crystal according to Czochralski method,
wherein Cu concentration in an observation window made of quartz provided in the furnace
for single crystal growth is 10 ppb or less.

78. (Currently Amended) A method for producing a silicon single crystal-

~~wherein a silicon single crystal is grown by a combined method of~~
~~— a method for producing a silicon single crystal by Czochralski method, the method~~
comprising:

melting a raw material in a crucible;
contacting a seed crystal on a melt surface; and
growing a silicon single crystal, wherein after melting of ~~a silicon~~ the raw material is
finished, it is left for 3 hours or more on a condition that a heating heater is heated with an

electric power of 80 % or more of the power in the raw material melting and flow amount of an inert gas introduced in the furnace for single crystal growth is flow amount in the single crystal growth or more, and then, a silicon single crystal is grown;grown, and

~~a method for producing a silicon single crystal by Czochralski method,~~

wherein when in-furnace components in the furnace for single crystal growth are cleaned, the cleaning is performed in a room environment in which cleanliness is class 1000 or more, and a silicon single crystal is grown by using the in-furnace cleaned components.

79. (Canceled)